

Application No.: 09/889,269
Attorney Docket No.: FUK-84
Response Dated: January 5, 2005
Reply for Advisory Action Dated: August 27, 2004

REMARKS

Claims 1 and 2 are pending in the application. Claims 3 and 4 have been previously cancelled.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,656,099 to Ohmi.

Applicant acknowledges the statements of the Examiner pertaining to method-type arguments in a product claim.

As discussed further, Applicant does not predicate patentability on the difference between the process of the invention and the process taught by Ohmi, but on structural differences in the end products. (For review purposes, the end product of the invention is formed by depositing a chromium coat on a metallic material and then oxidizing the chromium coat to form a chromium-oxide passivation film, while the end product of Ohmi is formed by electrochemical buffing the surface of a stainless steel base to cause chromium atoms in the steel alloy to migrate towards the surface to form a workstrain layer, and then subjecting the steel to an oxidizing atmosphere.) However, not only are the processes different, but the respective end products of the invention and Ohmi are different, on the basis of differences currently of record in the application.

A brief summary is first noted.

In accord with its plain meaning, and supported by the specification, the structure of a “chromium coat” is not met by the chromium oxide layer of Ohmi. The recited “coat” exists as a discrete structure separate and distinct from the metallic material, while in Ohmi the Beilby chromium oxide layer exists intrinsically as part of the original stainless steel base (i.e., the upper

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surface of the original steel base in Ohmi corresponds to the Beilby chromium oxide layer). The recited “coat” constitutes a deposit or addition relative to the recipient metallic material (“chromium coat on the metallic material”), while no such arrangement exists in Ohmi between the steel base and the upper surface of the original steel base, i.e., the chromium oxide Beilby layer. Briefly stated, Claim 1 recites (at least by implication) that the chromium coat is not part of the metallic material. This structural feature is not disclosed by the corresponding elements in Ohmi, namely, the Beilby chromium oxide layer referenced by the Examiner is part of the original stainless steel base (“metallic material”).

Applicant believes that Claim 1 is patentable over Ohmi because the structural recitation of a “chromium coat”, when accorded its plain meaning considering the claim as a whole and consistent with its construction ascribed by the specification, is not met by the chromium oxide layer of Ohmi identified by the Examiner. In particular, the recited “coat” of the invention is structurally different than the “layer” of Ohmi, as then is the claimed structural relationship of the chromium coat to the metallic material patentably different than the relationship of the layer of Ohmi to the stainless steel base. The recitation of a “chromium coat on the metallic material” implies an aggregate combination of discrete separate structures (i.e., the chromium coat is not part of the metallic material but a deposit or addition thereto) that is not met by the chromium oxide layer and stainless steel base of Ohmi, where such chromium oxide layer of Ohmi intrinsically exists as part of the original stainless steel base.

Referring to Claim 1, the recited “chromium coat” constitutes a deposit or addition to the recipient metallic base material, making it structurally distinct – and patentably distinguishable – from the chromium oxide “layer” of Ohmi. This characterization of the “coat” as a deposit or

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addition to the metallic material is embraced by the language of the claims (at least by implication) – specifically, in consideration of the meaning of “coat” and the use of the preposition “on” to structurally associate the chromium coat and the metallic material (“chromium coat on the metallic material”) - and fully accords with its plain meaning and description in the specification. (See, e.g., Page 6, lines 3-11; Page 8, lines 3-9). Furthermore, based on the construction of “chromium coat”, the composite structural arrangement found in the recitation of “a chromium coat on the metallic material” is not met by the chromium oxide layer and stainless steel of Ohmi. The recited “coat” represents a deposit or addition relative to the recipient metallic material, where no such structural arrangement or relationship exists in Ohmi.

It is considered that the “chromium coat” of the invention – in structural terms - is an addition to (and not part of) the “metallic material”, a construction which proceeds at least by implication from the language of the claims (“chromium coat on the metallic material”) and accords with the plain meaning of the term “coat” and preposition “on”, as supported also by the disclosure. As taught by the specification consistent with its plain meaning, the oxidized chromium coat is structurally separate and distinct from the metallic material on which it is disposed. Applicant submits that this structural subject matter (separateness and distinctness between the chromium coat and metallic material) is embraced by the language of the claims (at least by implication). As such, it is considered that Claim 1 sets forth an article having a composite structure including an aggregation of separate and distinct structural elements (oxidized chromium coat and metallic material).

Specifically, the recitation of “a chromium coat on the metallic material” - in view of the construction of “chromium coat” - defines an aggregate structural arrangement not disclosed by

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Ohmi. In particular, the recitation of “chromium coat” and the use of the preposition “on” to define the structural relationship between the oxidized chromium coat and metallic material – when ascribed its plain meaning consistent with the disclosure - expresses that the chromium coat constitutes a deposit and/or addition relative to the metallic material, so that the overall structure constitutes an aggregation of distinct discrete structures having no correspondence with the referenced elements of Ohmi (steel base and upper surface of the steel base, i.e., chromium oxide Beilby layer). Applicant submits that this subject matter is recited at least by implication in the claims, based at least on the construction of the express terms “coat” and “on”. This arrangement between the chromium coat and metallic material in the claims is not satisfied by the referenced elements of Ohmi. In Ohmi, the chromium oxide “layer” intrinsically is not a structure distinct from the base metallic material, at least not within the meaning of a deposit or addition relative to the original steel base as seen in the claimed structural relationship existing between the recited “chromium coat” and “metallic material” of the invention. Rather, the chromium oxide “layer” of Ohmi is itself part of the original steel base material.

In Ohmi, the chromium layer is not distinct from the stainless steel base but subsists within the steel base as a part thereof, albeit at the surface. In particular, the surface workstrain layer of Ohmi does not constitute an addition or deposit to the steel base but is itself still part of the overall steel base entity. The fact that the upper surface of the steel structure is transformed into a chromium layer (by mechanical manipulation, i.e., electrochemical buffing) does not alter – as a structural matter – the essential relationship that the chromium layer of Ohmi lies within and intrinsically remains part of the original steel base. As such, it is considered that Ohmi discloses only a monolithic structure (stainless steel structure) and not the aggregate structural

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arrangement set forth in the claims comprising a composite combination of structurally distinct and separate elements, namely, a metallic material with an addition/deposit (chromium coat). Stated otherwise, it may be considered that the claims, accorded their plain meaning as understood by the specification, recite an aggregate combination of individual, discrete, distinct-body structures (chromium coat and metallic material) disposed in the indicated arrangement (chromium coat on the metallic material), while Ohmi discloses only a single unitary structure of steel with its upper surface constituted as a chromium oxide layer.

It is therefore considered that the oxidized “chromium coat” of the invention is different in kind from the chromium oxide layer of Ohmi, and, consequently, that the arrangement defined by an oxidized “chromium coat on the metallic material” of the invention is different in kind from the stainless steel base of Ohmi having its upper surface constituted as a chromium oxide layer. Regarding the structural relationship set forth by the claims, it is noted that the preposition “on” linking the oxidized chromium coat to the metallic material – when viewed in its plain meaning as further understood by the specification - defines an arrangement not satisfied in Ohmi by the stainless steel base and the surface portion of the base (transformed into the oxidized workstrain layer). The use of the preposition “on” also demonstrates the use of distinct structural entities in the invention (chromium coat and metallic material) that patentably differs from the stainless steel base of Ohmi and the workstrain layer that itself is part of (and not distinct from) the original steel base entity.

The Examiner refers to Col. 2, lines 33-45 in support of the rejection. Reliance, for example, is placed on the statement of “an oxide passivation film having a layer consisting of a chromium oxide” and “a stainless steel ... has an oxide passivation film consisting mainly of

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chromium oxide.” However, these referenced disclosures, when viewed within the totality of the teachings of Ohmi, make clear that such “oxide passivation film” exists as part of – and not distinct from – the original stainless steel base and hence does not meet the recitation of “chromium coat on the metallic material” within the meaning of the claims, specifically in regard to the understanding (at least implied in the claims) of the recited “coat” as an addition or deposit with respect to the recipient metallic material. Relevant teachings of Ohmi are found at Cols. 3-4 concerning the Beilby layer (chromium oxide layer) being wholly and intrinsically constituted as part of the original steel base.

Applicant is mindful of the statements made by the Examiner in the Advisory Action concerning method-type arguments, and concurs with the statement that method limitations *per se* do not determine the patentability of the product. However, in order to clearly establish the reasons for why the structural combination of the oxidized “chromium coat” and “metallic material” recited in Claim 1 is patentably distinct from the stainless steel base of Ohmi and its specified upper surface (Beilby chromium oxide layer), it is useful to look at the relationship of the chromium coat to the metallic material in Claim 1 as compared to the relationship of the chromium oxide layer to the stainless steel base of Ohmi. A study of this relationship involves, at least in part, a discussion of the manner in which the respective structural arrangements are formed.

According to the invention, Claim 1 recites an aggregate combination of discrete, individually distinct structures, namely, an oxidized chromium coat and a metallic material. In accord with its plain meaning, as understood further by the specification, the recited “coat” does not constitute a structural part of the “metallic material”, but is structurally separate and distinct

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from it. This distinctiveness is apparent from the manner in which the combination is formed. For example, in the invention, the fabrication of the combination makes it clear that the term “coat” is to be understood as a structure distinct and discrete from the base structure (metallic material) on which the coat is disposed (i.e., added or deposited), to thereby produce an aggregation of distinct structural elements. (See, e.g., Page 6, lines 3-11; Page 8, lines 3-9). This understanding also accords with its plain meaning when viewed in the context of the claim as a whole, namely, “chromium coat on the metallic material.”

In Ohmi, however, the chromium oxide layer does not constitute a “coat” that is structurally distinct and discrete from the “metallic material” (stainless steel base), in the manner recited by the claims. The chromium oxide layer of Ohmi is embodied within and constitutes a part of the stainless steel body and therefore is not distinct from it, at least not within the meaning of the structural relationship that exists between the “chromium coat” and “metallic material” of the claims. In particular, the indistinct relationship of the layer to the stainless steel base of Ohmi is seen in its fabrication. In Ohmi, the stainless steel body is subjected to electrochemical buffing that alters the composition of the surface portion of the stainless steel body so that it changes to chromium. (See Col. 3, lines 4-10; Col. 4, lines 13-27; Col. 5, lines 35-50). However, within the meaning of the claims, this structural relationship between the chromium oxide layer and stainless steel base of Ohmi does not satisfy the relationship between the recited chromium coat and metallic material of the claims. Therefore, the recited combination of chromium coat and metallic material is not satisfied by the layer and stainless steel of Ohmi.

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Referring elsewhere in the claims, Claim 1 further states that the surface having the recited roughness refers to the surface of the metallic material on which the chromium coat is disposed. By implication, then, the metallic material surface having the specified roughness receives the chromium coat. However, this structural relationship is not found in Ohmi. In particular, in view of the recited relationship of the chromium coat “on” the metallic material, it is at least implied in the claim that the recited surface having the roughness of not more than 1.5 μm lies underneath the chromium coat. Claim 1 therefore defines an arrangement where the chromium coat is disposed on a metallic material surface having a roughness of not more than 1.5 μm . (See, e.g., Page 6, lines 3-11; Page 9, lines 1-4 and 16-23; Page 9, line 24 to Page 10, line 2).

Regarding the recitation of the surface roughness, the Examiner relies upon the following disclosure in Ohmi:

For example, in the case that the interior surface of a SUS 316L having an original surface roughness, R_{max} , of 20 to 50 microns is buffed using SiC abrasives of from #120 to #1500, the buffing with a 20-% NaNO_3 aqueous solution as the electrolyte solution of passivation type while applying an electrolytic current density of 0 to 6 A/cm^2 gives a interior surface having a surface roughness, R_{max} , of 0.1 micron or less. (Col. 3, line 65 to Col. 4, line 5).

From the above disclosures, it is seen that the surface of Ohmi that possesses the indicated surface roughness corresponds to the outermost exposed surface of the overall structure, namely, at the uppermost surface of the chromium oxide layer, not underneath the layer at a location interposed between the layer and the underlying steel body. By comparison, in Claim 1, it is implied that the specified metallic material surface having the roughness of not more than 1.5 μm is disposed beneath and receives the chromium coat. Accordingly, since the Ohmi

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roughness surface relied upon by the Examiner does not satisfy the roughness surface limitation of the claims, Ohmi does not disclose a chromium coat on a metallic material surface having a roughness (Ra) not more than 1.5 μm .

For the foregoing reasons, Applicant respectfully submits that Ohmi does not teach the subject matter of Claim 1 directed to “a chromium coat on the metallic material of which surface roughness (Ra) is not more than 1.5 μm .”

In view of the above, it is believed that Ohmi contains no disclosure that stands for the teaching of a distinct discrete chromium coat, within the meaning of the term “coat” understood in the claims, and even less the teaching of an aggregate combination of discrete structures disposed in the specified arrangement (chromium coat on metallic material), and specifically with the chromium coat disposed on a metallic surface having a roughness not more than 1.5 μm .

In view of the foregoing, Applicant believes that Claim 1 is patentable over Ohmi and respectfully requests that this rejection be withdrawn.

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,248,676 to Uchida et al. (hereinafter “Uchida”) in view of Ohmi.

The Final Office Action (pages 3-4) states as follows in relevant part:

“Uchida discloses all the limitations of the instant claimed invention except that the passivation film is chromium oxide. ... It would have been obvious to one of ordinary skill in the art to use a chromium oxide as the passivation film in Uchida as taught by Ohmi because of the improved corrosion resistance gained by layer consisting only of chromium oxide.”

The improvement proposed by Uchida concerns the use of a strictly chromium layer interposed between the uppermost chromate film and the underlying steel plate, whereas conventionally the chromate film was formed directly on the steel plate surface yielding a poor

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adherence therebetween and low corrosion resistance. By use of the intermediate chromium-only layer, greatly improved adherence properties were obtained not only between the interposed chromium layer and upper chromate film but between the chromium layer and the steel surface, promoting improved overall corrosion resistance. (Col. 8, line 45 to Col. 9, line 10).

Given the essential nature of the Uchida invention – namely, the use of the chromium-only layer between the chromate film and steel mounting surface – it is believed that any further treatment of such chromium-only layer, especially of a kind that would alter its compositional arrangement (e.g., oxidation), would represent a departure from the core inventive teaching of Uchida to a degree amounting to discouragement of such treatment and hence not be made by one skilled in the art, much less even be considered an obvious modification. At best, modification of the chromium-only layer of Uchida in the manner proposed by the Examiner appears to be based on an impermissible obvious to try rationale, even without considering the effect of the discouragement to do so considering that the exclusive subject matter of the Uchida invention lies in the use of a chromium-only layer between the outer chromate film and steel base.

Separately, Applicant notes that the recitation in Claim 1 of “a passivation film consisting of chromium oxide obtained by oxidizing a chromium coat” expresses structurally that the end product film contains an oxidized chromium coat, i.e., chromium oxide coat.

The Advisory Action states in relevant part:

Furthermore, there does not appear to be a difference between the prior art structure and the structure resulting from the claimed method because Uchida does disclose an oxidized chromium coat on the metallic material (col. 3, lines 28-56 and col. 6, lines 14-29). (Advisory Action, Page 4).

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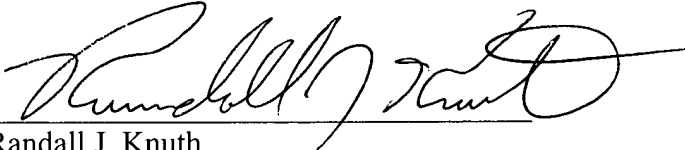
However, these cited passages do not disclose any chromium oxide structure disposed in an arrangement as set forth in Claim 1, namely, a chromium oxide coat on the metallic material. For example, in the cited passage at Col. 6, lines 14-29, the discussion pertains to an arrangement where a strictly metallic chromium layer 2 is disposed on steel 1, with an uppermost chromate film 3 disposed on chromium layer 2 to fill in pin hole areas 4.

In view of the foregoing, Applicant believes that Claims 1 and 2 are patentable over Uchida in view of Ohmi and respectfully requests that this rejection be withdrawn.

Applicant believes that the application is now in condition for allowance and respectfully requests favorable action in accordance therewith.

If the Examiner has any questions or comments that would advance prosecution of this case, the Examiner is invited to call the undersigned at 260/484-4526.

Respectfully Submitted,



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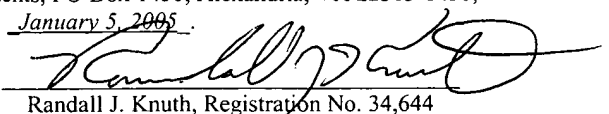
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